



PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference NT 001-P/WO	FOR FURTHER ACT	rion	See Form PCT/IPEA/416				
International application No.	International filing date	(day/month/year)	Priority date (day/month/year)				
PCT/CH2003/000624	16 September 200	3 (16.09.2003)	11 November 2002 (11.11.2002)				
International Patent Classification (IPC) or national classification and IPC C09C 1/00							
Applicant BÜHLER AG et al.							
This report is the international prelice Authority under Article 35 and trans	1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.						
2. This REPORT consists of a total of	6sheets, i	including this cover s	sheet.				
3. This report is also accompanied by							
a. (sent to the applicant and to the International Bureau) a total of 12 sheets, as follows:							
sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).							
sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.							
b. (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).							
This report contains indications relating to the following items:							
Box No. I Basis of the r	eport						
Box No. II Priority							
Box No. III Non-establish	hment of opinion with reg	gard to novelty, inver	ntive step and industrial applicability				
Box No. IV Lack of unity of invention							
Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement							
Box No. VI Certain docu	<u> </u>						
Box No. VII Certain defects in the international application							
Box No. VIII Certain observations on the international application							
Date of submission of the demand		Date of completion	of this report				
15 March 2004 (15.03	3.2004)	03 D	December 2004 (03.12.2004)				
Name and mailing address of the IPEA/EP		Authorized officer					
Facsimile No.		Telephone No.					

Translation



International application No.

PCT/CH2003/000624

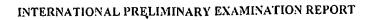
INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

Box No.	1 1	sasis of the report								
1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.										
	This report is based on translations from the original language into the following language which is language of a translation furnished for the purpose of:									
		international search (under Rules 12.3 and 23.1(b))								
	publication of the international application (under Rule 12.4)									
	international preliminary examination (under Rules 55.2 and/or 55.3)									
ı										
2. With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report): The international application as originally filed/furnished										
		scription:								
لکنا	pages	•	4, 5, 8-17	, as originally filed/furnished						
	pages	2, 2a, 3, 3a, 6, 7	received by this Authority on	29 July 2004 (29.07.2004)						
	pages		received by this Authority on							
	the cl	ims:								
	pages			, as originally filed/furnished						
	pages			gether with any statement) under Article 19						
	pages		received by this Authority on	29 July 2004 (29.07.2004)						
	pages	*	received by this Authority on							
	the di	awings:								
	pages		1/3-3/3	, as originally filed/furnished						
	pages	•	received by this Authority on							
	pages	*	received by this Authority on							
ΙП	a seq	ence listing and/or any related table(s) - s	ee Supplemental Box Relating to S	Sequence Listing.						
3.	The	mendments have resulted in the cancellation	on of:							
ا. ا	[]									
	님	the description, pages								
	닐	the claims, Nos.								
	닏	the drawings, sheets/figs								
	닏	the sequence listing (specify): any table(s) related to sequence listing (specify)								
4.	made	report has been established as if (some of since they have been considered to go 70.2(c)). the description, pages the claims, Nos. the drawings, sheets/figs the sequence listing (specify): any table(s) related to sequence listing (s	beyond the disclosure as filed,	s report and listed below had not been as indicated in the Supplemental Box						
* If ite	em 4 a _l	plies, some or all of those sheets may be n	narked "superseded."							

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Acation No.
PCT/CH 03/00624

	II VI DIC VIII I			PCT/CH 03/0	U624		
v.	Reasoned state citations and ex	ment undo xplanation	er Article 35(2) with regard to now s supporting such statement	elty, inventive step or industrial applicabil	ity;		
1.	Statement						
	Novelty (N))	Claims	1-40	YES		
			Claims		NO NO		
	luccontinuo stan (IC)		Claims	1-40	YES		
	Inventive step (1S)		Claims		MO		
				1-40			
	Industrial applicability (IA)		(IA) Claims	T-40	YES		
			Claims		NO		
2.	Citations an	d explanat	ions				
	1)	This :	report makes refere	ence to the following			
		docum	ents:				
		D1:	US-A-5 912 767 (LE	EE ROBERT ARTHUR) 15 Ju	ine		
			1999 (199-06-15)				
		D2:	US-B1-6 168 100 (H	KATSUMATA TAKATOSHI ET	AL) 2		
			January 2001 (200				
D3: US-A-6		US-A-6 068 691 (BI	068 691 (BENOIT DENNIS R ET AL) 30 May				
			2000 (2000-05-30)				
Octobe				DYOTA MOTOR CO LTD) 27			
			October 1999 (1999)		0.004		
	(2001-			KILLEY EDWARD J) 5 June	3 2001		
			(2001-06-05)	war Dar Dir) - F. Bahamana - C	2002		
		D6:		KAY RALPH) 5 February 2	1002		
		20	(2002-02-05)	(BRADLEY RICHARD A ET	AT.) 10		
		D7:	July 2003 (2003-0)		7111/ 10		
		D8:	•	NOP KARL) 18 May 1976	(1976-		
		ו סע:		in the application	(
		D9:		SH GARY) 28 February 19	984		
				tioned in the applicati			
			(~ *			
	D1 (US5912767) discloses diffractive elements which						
	can be used, for example, in optically variable inks						



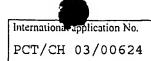
International Supplication No.
PCT/CH 03/00624

(OVI), for holographic images, or in adhesives. Each element consists of a thin film with a diffractive pattern printed on one or both sides thereof. The elements are 30 μm or less in size, and therefore they have the typical dimensions of pigment flakes. The diffractive patterns consist of grooves or geometrically shaped indentations. The diffractive structures can be applied in the form of concentric circular patterns or concentric polygonal grooves. Figures 1 and 2 show different diffractive elements. Figure 1 shows a diffractive element having different areas, each of which contains different diffractive patterns that generate different diffractive effects depending on the viewing angle. In figure 2, a thin film is embossed with concentric circular grooves spaced at a distance of 0.4 to 0.6 um.

D2 (US6168100) discloses embossed metal pigment flakes used as holographic pigments. Their average size falls in the range of 25 to 50 μm , and their thickness in the range of 0.4 to 1 μm . Figure 9 shows a metal film that is embossed on both sides and then ground into flakes. The metal film can be an aluminum film, for example. The metal flakes can be optionally coated with an acryl melamine resin.

D3 (US6068691) discloses embossed flake-shaped metal pigments used in printing inks and coatings, for example in the form of holograms for security documents. The production method involves embossing at least one surface of a carrier layer, which is then metallized in order to form an embossed metal film (thickness: 100-500 angstroms, which equals $0.01\text{-}0.05~\mu\text{m}$), which is in turn ground into pigment





flakes (size: 25-50 μm). The diffraction patterns can be diffractive or holographic patterns. Example 1 describes this type of aluminum pigment.

D4 (EP0952009) discloses holographic pigments (particle size: 5-50 μ m, thickness: 0.3-5 μ m) with an embossed pattern. The production process includes applying a resin layer to an embossed carrier plate, drawing off the resin film, applying a thin metal film to the embossed resin surface, and then grinding.

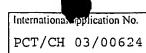
D5 (US6242510) discloses adhesive labels consisting of a polymer medium and embossed, diffractive flakes. The flakes can be made of aluminum and are $50-100~\mu m$ long and $9-12~\mu m$ thick.

D6 (US6344245) discloses security documents, the production process of which differs from that in the application only in that the final step does not involve the grinding of the embossed metal film. The metal film can contain holograms or diffraction patterns in the UV wavelength range.

2) Novelty - PCT Article 33(1) and (2)

Novelty is recognized for independent claims 1 and 23, since none of the documents D1-D9 discloses the feature of the <u>epitaxial application</u> of the sealing means. Furthermore, novelty is also recognized for claims 2-22 and 24-40, which either are dependent on claim 1 or claim 23, respectively, or refer thereto.





3) Inventive step - PCT Article 33(1) and (3)

The problem to be solved by the present application can be regarded as that of providing a pigment that generates color effects by means of diffraction. The solution consists in providing a pigment with a surface area having a defined diffractive structure that generates diffractive effects, for example holograms, in the UV and/or visible wavelength range. Furthermore, the pigment has an inner diffractive structure surrounded by an epitaxially applied sealing material.

None of the cited documents discloses the feature of the epitaxial application of the sealing material, and the prior art does not suggest any possible advantages of this method. Therefore, the Examining Authority is of the opinion that epitaxy is not a standard application method that a person skilled in the art would select without thereby being inventive. Consequently, inventive step is recognized for the subject matter of claims 1-40.